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HEPATICAE OF NEW MEXICO

PAUL C. STANDLEY

During the last few years extensive collections of phanerogamic plants have been made in New Mexico by Mr. E. O. Wooton and the writer for use in the preparation of the Flora of the state which has appeared recently.[1] It is unfortunate that more time could not be devoted to the lower cryptogams, but the writer nearly always collected specimens of those he came upon and often gave considerable time to searching specially for them. In this way there have accumulated fairly representative collections of the parasitic fungi, lichens, and mosses of the state, but in the case of the hepatics results have been less fortunate. Whether this is because these plants are more difficult of detection the writer does not know, but he is more inclined to believe that the hepatic flora is limited to a relatively small number of species and is not very abundantly represented by individuals. During the summer of 1914 over a month was spent in Rio Arriba County, in northern New Mexico, during which time repeated search was made for hepatics, yet only three species were found, while in the same locality the mosses were abundant.

The present list of seven species is absurdly short when compared with the list of 41 recently published for Colorado,[2] yet, in view of the fact that nothing has ever been written upon the New Mexican representatives of this group of plants, it seems worth while to record the data which have accumulated, scant though they may be. When the state has been explored by some one familiar with Hepaticae, a larger number of species will probably be discovered, but it is doubtful if the list will ever be a very long one. Mosses are far less abundant, apparently, in New Mexico than in the more eastern states, although the species are said to be very interesting. In the larger part of the state, a region of arid or semi-arid plains, conditions are wholly unsuited to a profuse development of mosses and hepatics, although in the driest situations one often finds one or more xerophilous mosses. In the numerous mountain ranges, however, most of which are heavily timbered and have a moderately high rainfall, well watered as they are by numerous springs and small streams, there is no obvious reason why these plants should not thrive. All of the species recorded in the present paper, with one exception, are confined to the higher mountains, where climatic and floristic features are similar to those of the Rocky Mountains of Colorado.

The hepatics listed have all been determined by Miss Caroline C. Haynes, for whose assistance the writer wishes to express his grateful appreciation.

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[1] Contributions from the U. S. National Herbarium, Vol. 19. 1915.

[2] BRYOLOGIST **18**: 44–47. 1915.

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1. *Plagiochasma rupestre* (Forst.) Steph.[1] Filmore Canyon, Organ Mountains, altitude 1800 meters, July 7, 1897, *Wooton.* This is probably the most interesting of our known species of Hepaticae, for it is reported in the United States only from southern Arizona and this one station in New Mexico. The Organ Mountains lie forty miles north of El Paso, Texas, and the Mexican border. They are notable for the large number of Mexican species occurring there, as well as for their large fern flora. One fern, *Phanerophlebia auriculata,* a member of a characteristically Mexican and Central American genus, is known in New Mexico only from this range. Filmore Canyon lies on the west slope of the Organs, being a broad, open canyon with beautifully colored porphyritic sides, bearing only a sparse vegetation of xerophilous plants. High up in the canyon, however, a few pines and Douglas spruces appear, accompanied by other species typical of the Transition Zone. If the elevation given upon the label is correct, this *Plagiochasma* was collected near the base of the mountains, amid plants characteristic of the Upper Sonoran Zone.

2. *Reboulia hemisphaerica* (L.) Raddi. Gilmore's Ranch, White Mountains, altitude 2,250 meters, August 4 and 6, 1897, and August 17, 1908, *Wooton.* This locality is a very interesting one botanically. Considerable collecting has been done here, many of the plants of Wooton's 1897 set, which was widely distributed, having been gathered in the immediate vicinity. It is the type station for a long list of species of phanerogams.

3. *Conocephalum conicum* (L.) Dumort. Collected twice in the Sandia Mountains, east of Albuquerque: Placitas, August 3, 1910, *Wooton;* in limestone soil along a stream, Balsam Park, 1914, *Miss Charlotte C. Ellis,* 12.

4. *Marchantia polymorpha* L. Placitas, Sandia Mountains, August 3, 1910, *Wooton.* In wet soil and along brooks, Brazos Canyon, Rio Arriba County, August, 1914, *Standley & Bollman,* 10701, 10795. In the latter locality this conspicuous plant was abundant, growing nearly everywhere along the mossy banks of the brooks which flow through the pine and spruce timber.

5. *Chiloscyphus rivularis* (Schrad.) Loeske. Ponchuelo Creek, Pecos National Forest, altitude 2,580 meters, in running water, July 30, 1903, *Standley.* Rio Pueblo, Taos County, August 11, 1910, *Wooton.* On wet soil and in brooks, Brazos Canyon, August and September, 1914, *Standley & Bollman,* 10703, 10793, 11181. Very abundant in the last locality, growing nearly everywhere in suitable situations.

6. *Porella platyphylla* (L.) Lindb. Holt's Ranch, Mogollon Mountains, July 20, 1900, *Wooton.* Gilmore's Ranch, White Mountains, altitude 2,250 meters, August 17, 1908, *Wooton.* Rocky Canyon, Grant County, August 8, 1911, *Holzinger.* All these localities are in the southern part of the state.

7. *Frullania Brittoniae* Evans? Northward face of a cliff, Brazos Canyon, Rio Arriba County, September 4, 1914, *Standley & Bollman,* 11138. Concerning this collection Dr. Evans states, in a letter to Miss Haynes: "The Frullania from New Mexico is certainly very close to *F. Brittoniae,* although the underleaves are not quite typical. I wish very much that the specimen had peri-

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[1] See Evans, Bull. Torrey Club **42**: 279. 1915.

anths, because these would settle the matter beyond doubt. As it is, I fear the determination will have to be considered provisional." The plant was collected on the face of a granite cliff overhanging the Brazos River, associated with *Selaginella Underwoodii* and various lichens and mosses. The genus is not reported from Colorado, but Brazos Canyon is not more than 25 miles south of the Colorado line.

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SYSTEMATIC AND ECOLOGICAL NOTES ON THE MOSSES OF WESTERN PENNSYLVANIA

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I. GENERAL NOTES

When the writer took charge of the botanical work in the Carnegie Museum in 1905 the need of bryological investigations in the region of Western Pennsylvania was at once apparent. Aside from the collections of Burnett in McKean County, of Linn & Simonton in Washington County, and of various scattered collections of Porter and of James, very little was known of the moss-flora of the region. In fact, the mosses of Eastern Pennsylvania, and of Ohio on the west, were much better known than those of Western Pennsylvania.

In connection with the general exploration of Western Pennsylvania for botanical specimens of all kinds, the writer has taken the opportunity for collecting much bryological material and, with the accumulation of this material, the specimens have been carefully studied and placed in the herbarium and, finally, as thesis work, there has been prepared a local manual[1] covering the mosses of Western Pennsylvania and adjacent territory. This manual was published in accordance with the requirements for a thesis, but that future investigation will add very greatly to its contents is a certainty, and that some conclusions therein reached will be found erroneous is a probability. It may be of some interest to call attention to some of the points brought out in the course of the preparation of the manual, as well as to refer to more recent finds.

In Porter's "*Catalogue of the Bryophyta and Pteridophyta found in Pennsylvania*" only 3 species of *Sphagnum* are reported for Western Pennsylvania. The herbarium at the Carnegie Museum now has 20 species and several varieties, if the writer has succeeded in properly identifying them, about as many as had been reported in the Catalogue for the whole state. It is interesting to note that, although the larger part of western Pennsylvania is unglaciated and has a rapid and thorough drainage, thus leaving few swamps or ponds, there are nevertheless a number of the species fairly well distributed in the region: *Sphagnum affine* R. & C. has now been found in eight counties, and *S. recurvum* (Beauv.) Warnst. in six. The best region for Sphagnums has been the Pymatuning Swamp in northwestern Pennsylvania, although a number of species have turned up

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[1] A Manual of the Mosses of Western Pennsylvania. 1913. 375 pages of text and 54 pages of figures.